

# (12) UK Patent Application (19) GB (11) 2 383 525 (13) A

(43) Date of A Publication 02.07.2003

(21) Application No 0307966.2

(22) Date of Filing 05.04.2003

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(51) INT CL<sup>7</sup>  
**A62B 17/00**

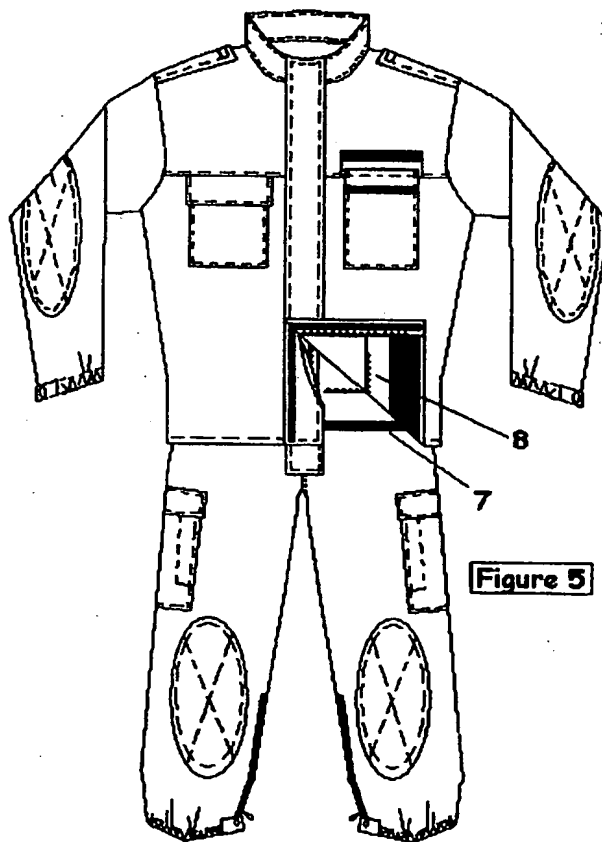
(52) UK CL (Edition V )  
**A3V V1A5C**

(56) Documents Cited  
**DE 029619960 U1** **US 6397393 B2**  
**US 5048124 A**

(58) Field of Search  
**UK CL (Edition V ) A3V**  
**INT CL<sup>7</sup> A41D, A62B, F41H**  
**Other: ONLINE DATABASES: WPI, EPODOC, JAPIO**

(54) Abstract Title  
**Two-piece riot suit**

(57) A riot suit which provides protection against fire and chemical attack comprise a jacket part and a trousers part. The jacket and trousers when attached form a full body suit. They are secured together using a zip 8 and a hook and loop fastening tape 7 which are provided around the circumference of the upper part of the trousers and the lower part of the jacket. This releasable securing means enables one part of the suit to be removed without having to remove the entire suit.



**Figure 5**

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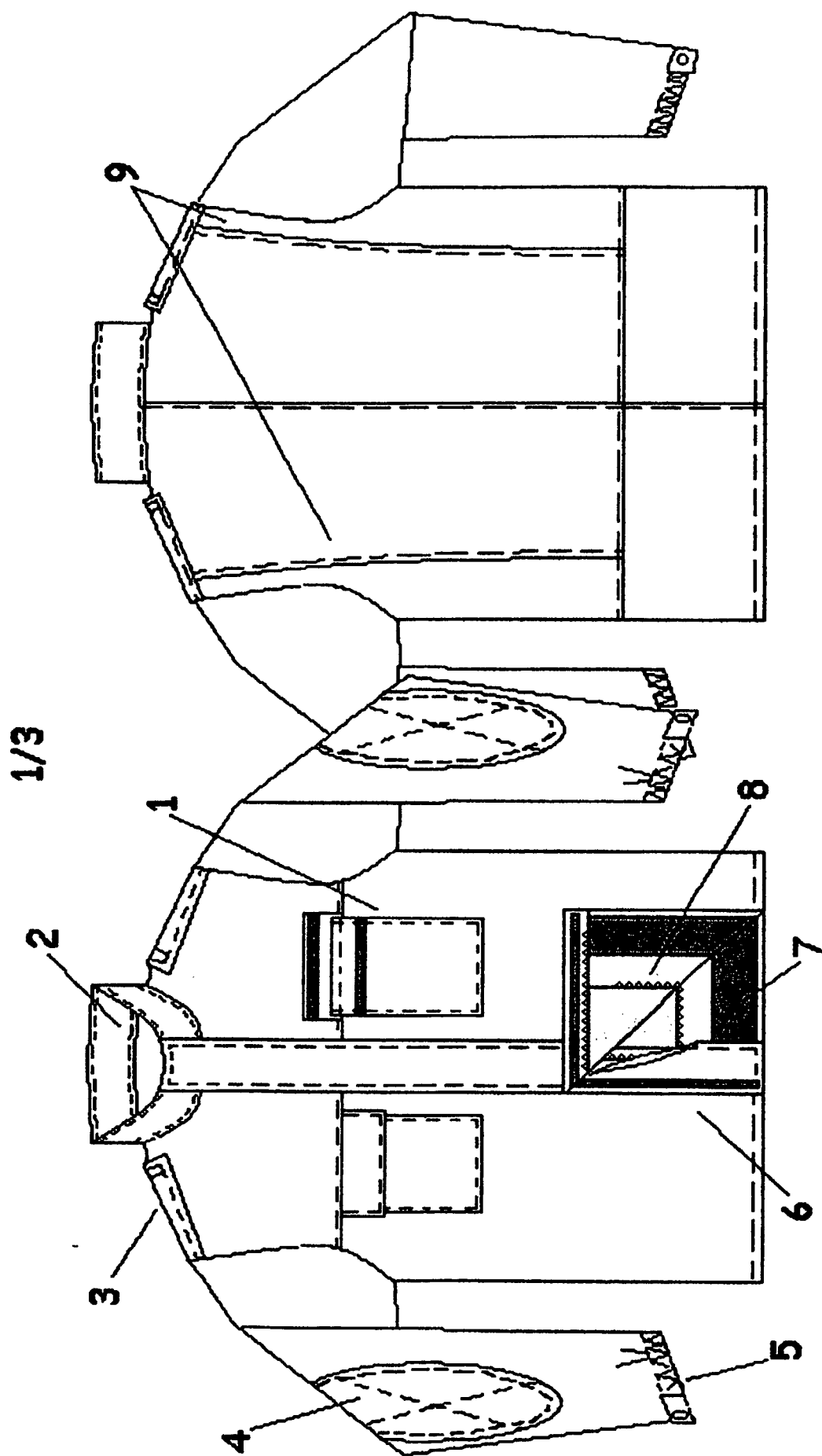


Figure 1.

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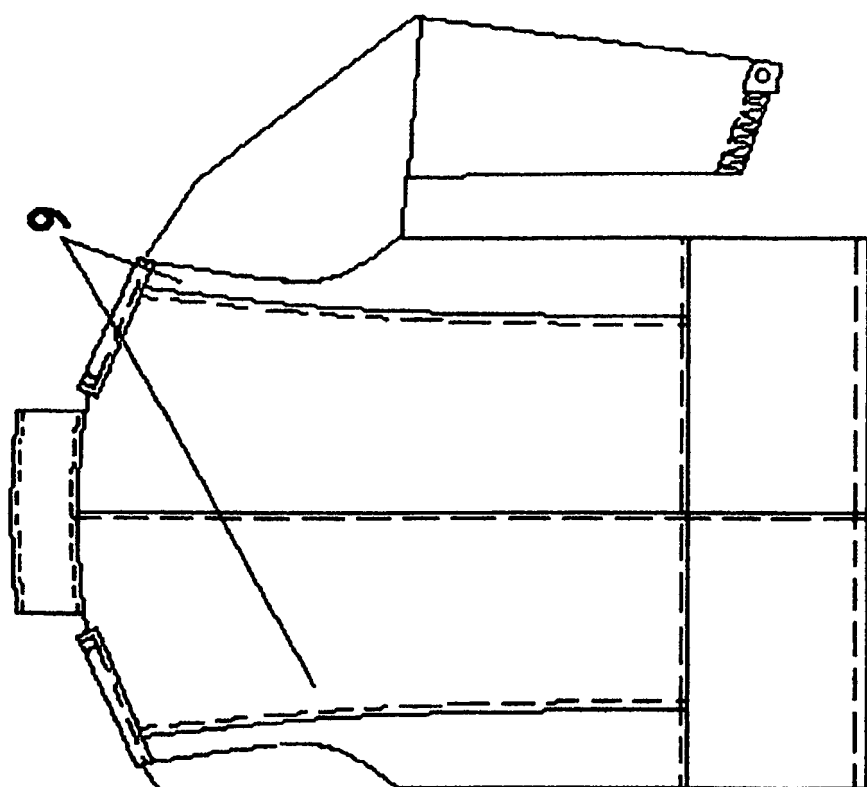


Figure 2.

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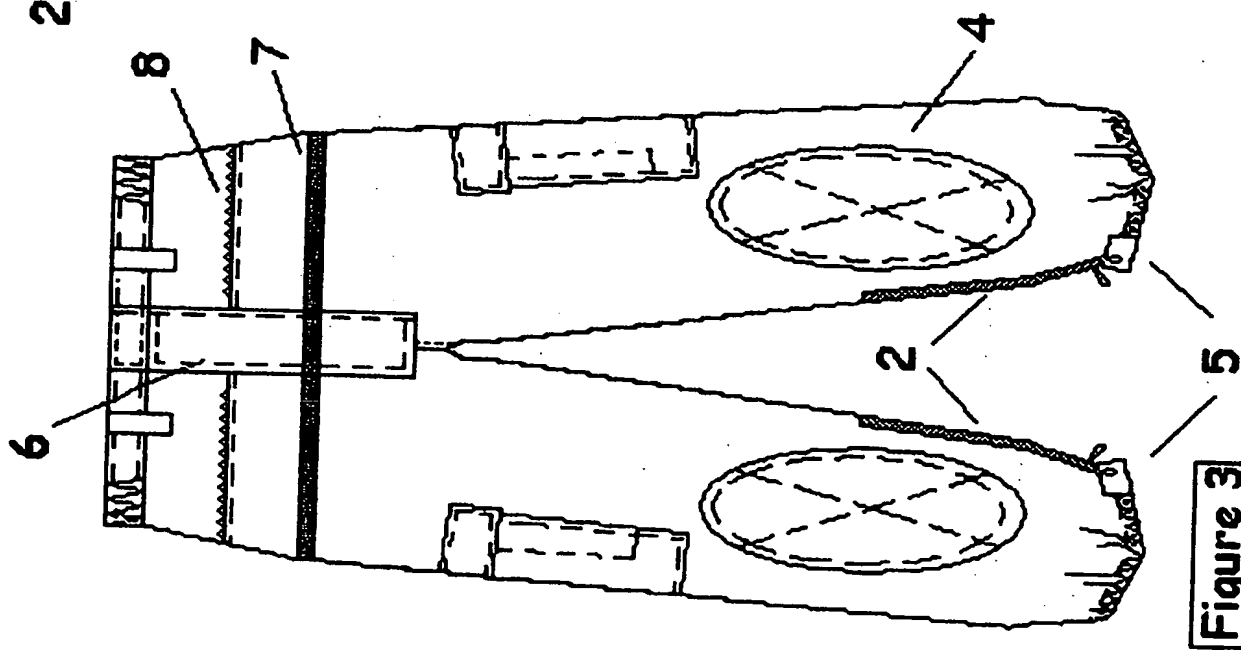


Figure 3

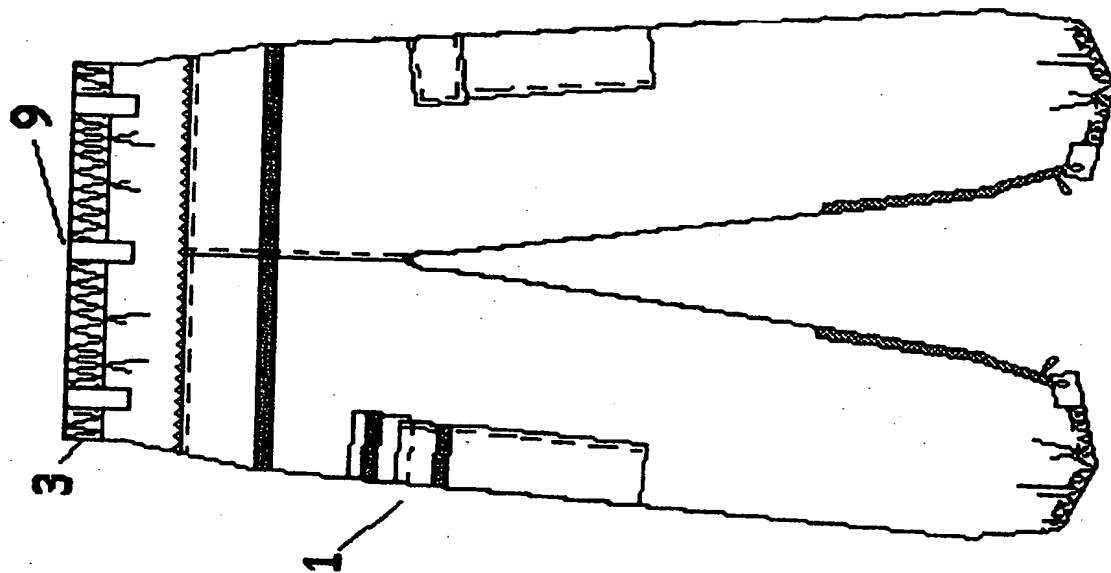
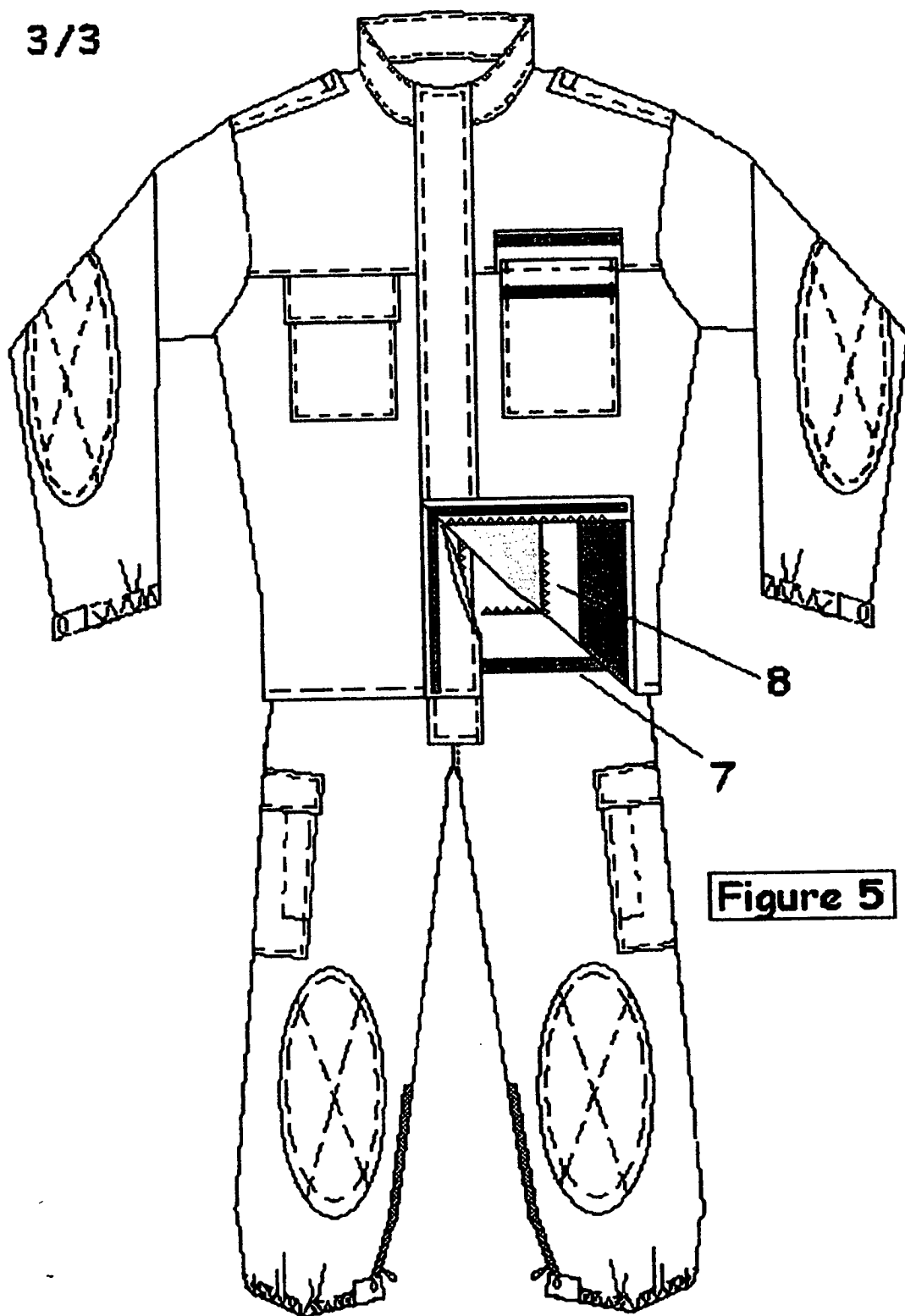


Figure 4

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**Figure 5**

## TWO-PIECE ADAPTABLE RIOT SUIT

The invention relates to a two-piece riot suit which offers full body flame protection to British Standards EN 531 A, B2, C1, EN 483 and EN 468 and specified chemical protection to EN 368.

This type of protection is already used however only as a full, one-piece coverall, the disadvantages of a one-piece suit being; to relieve heat exhaustion the whole suit must be removed, for lavatory purposes the whole suit must be removed, removal of the whole suit also requires time-consuming removal of leg protection armour which is worn under the suit. Previously, the concept of a two-piece suit has been dismissed due to the risks associated with the potential gap in clothing.

The object of this invention is to achieve a two-piece suit which, when combined in this particular fashion, will give all the protective benefits of a one-piece coverall without the disadvantages of the safety risk of complete removal for heat exhaustion, use of the lavatory or removal of protective leg armour.

This invention provides the benefits of being able to remove only the jacket to allow the body to cool, or to remove, or partially remove, only the trousers where necessary while being able to seal the jacket to the trousers to create a flame and chemical barrier for the protection of the wearer.

The two-piece suit offers a double seal to join the jacket to the trousers with a full, body circumference zip and full, body circumference hook and loop tape below. Both sealing methods being under the jacket to enable the added protection of an overlap of the jacket on top of the trousers.

A pictorial diagram of the invention will now be described with reference to the accompanying drawing in which:

- FIGURE 1 Shows a front view of the jacket section
- FIGURE 2 Shows a back view of the jacket section
- FIGURE 3 Shows a front view of the trouser section
- FIGURE 4 Shows a back view of the trouser section
- FIGURE 5 Shows the suit worn as a one-piece garment

As shown in Figure 1, the jacket section comprises of two breast pockets (1), the pocket extends up and over the flap (when folded up), so that when the flap is folded down and sealed with the hook and loop tape, the top of the pocket also folds over to give added protection to the pocket contents.

The jacket section offers extended protection to the neck area (2) with a stand collar fastening at the front with a double storm flap. The collar will sit under the riot helmet to give maximum fire and chemical protection.

Hook and loop tape fastening epaulettes (3) allow the use of insignia sleeves, this being of particular benefit in Police use. The insignia sleeves are slotted over the epaulette and fastened in position with hook and loop tape.

The jacket section offers addition protection at the elbow (4) with an extra two layer of fabric, this offers additional fire and chemical protection in a prominent area.

The cuff area of the jacket is elasticated to give a close fit at the wrist (5), this is further enhanced by the use of adjustable, stud fastening tabs at the underarm/cuff point, so allowing the fit to be tightened as necessary to allow the wearing of gloves.

In the diagram, the left hand hem of the jacket is folded back to show that the jacket is fastened vertically down the front with a two-way zip (6), the zip area is concealed and protected under a double layer storm flap, fastening left over right, this flap is secured with hook and loop tape the full length of the flap. The two-way zip allows access to the trousers without opening the jacket at the neck.

The inside hem of the jacket has a 50mm wide band of hook fastening tape (7) the full circumference of the jacket, this will join to loop tape positioned on the trousers, the 50mm width allows variation in the placement and attach of the trouser tape in consideration of body fit. This creates a secure seal against gaps in the protection from fire and chemical threat.

Above the hook fastening tape is positioned one side of the zip fastening (8), the zip circles the garment 11.5cm from the hem, this zip will secure to the other side of the zip on the trousers to create a secure bond between the two garments which cannot be pulled apart in the course of normal wear. Once the zip and hook and loop tape have been secured then the garment effectively becomes a one-piece coverall with all the inherent benefits.

The back of the garment has a pleat over each shoulder (9), this allows the wearer an amount of ease in movement across the back when reaching, therefor putting less stress on other seams.

As shown in Figure 2, the jacket section comprises of two side leg pockets (1), the pocket extends up and over the flap (when folded up), so that when the flap is folded down and sealed with the hook and loop tape, the top of the pocket also fold over to give added protection to the pocket contents.

The inside legs from knee to hem (2) has the addition of a zip which fastens knee to hem, this allows access to the inner leg armour protection for adjustment or removal.

The side front and full back waist is elasticated (3) to allow for a secure but adjustable fit, allowing the wearer to move freely without the restriction of a rigid waistband. The waistband also carries five belt loops (9) to allow for the secure addition of a belt to further enhance the fit of the garment.

The trouser section offers addition protection at the knee (4) with an extra two layer of fabric, this offers additional fire and chemical protection in a prominent area.

The hem area of the trouser is elasticated to give a close fit at the ankle (5), this is further enhanced by the use of adjustable, stud fastening tabs at the inside leg/hem point, so allowing the fit to be tightened as necessary to allow the wearing of boots.

The trouser is fastened vertically down the front with a zip (6), the zip area is concealed and protected under a double layer storm flap, fastening left over right, this flap is secured with hook and loop tape the full length of the flap.

The outside hip of the trouser has a 20mm wide band of loop fastening tape (7) the full circumference of the trouser, this will join to hook tape positioned on the jacket, the 20mm width can be positioned at varying points on the jacket in consideration of body fit. This creates a secure seal against gaps in the protection from fire and chemical threat.

Above the loop fastening tape is positioned one side of the zip fastening (8), the zip circles the garment 11.5cm from the top waist edge, this zip will secure to the other side of the zip on the jacket to create a secure bond between the two garments which cannot be pulled apart in the course of normal wear. Once the zip and hook and loop tape have been secured then the garment effectively becomes a one-piece coverall with all the inherent benefits.

Figure 3 shows the two garments worn together as a full body protective suit.

The seal of these two garments gives the Police force a protective garment for use in riot conditions where the wearer can be under attack from chemicals and fire, e.g. Petrol bombs. The garments can be quickly removed in specific areas only, if necessary, to cool the body after strenuous exertion.

**CLAIMS**

1. A two-piece fire and chemical protection riot suit which, when sealed together with the use of a zip and hook and loop fastening tape, creates a full body protective suit to retard fire and chemical attack.
2. A two-piece fire and chemical protection riot suit which can be removed or opened in part as necessary without removing the complete garment.
3. A two-piece fire and chemical protection riot suit with a specific method of joining the jacket and trousers together which renders the garment impenetrable to fire and specific chemical intrusion.





INVESTOR IN PEOPLE

Application No: GB 0307966.2  
Claims searched: 1

Examiner: James Hull  
Date of search: 14 May 2003

## Patents Act 1977 : Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A		DE 29619960 U1 HEIN GERICKE GMBH. Protective clothing for motorcyclists with zip fastening means between jacket and trousers.
A		US 6397393 B2 FRED ALGER. Clothing combination using hook and loop strips.
A		US 5048124 A1 E.I. DU PONT DE NEMOURS. Easy access protective coveralls with hook and loop strip and zip.

### Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>v</sup>:

A3V

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup>:

A41D

A62B

F41H

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, JAPIO,

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